

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method of designing a programmable logic device comprising the steps of:

~~identifying a cost function that penalizes floorplans of a circuit design that do not fit on the programmable logic device;~~

defining modules of a circuit design comprising components of a same type;

prior to annealing the circuit design, determining a set of shapes associated with ~~at least one~~ each module; and

annealing the circuit design to determine a floorplan by, at least in part,
selecting a different shape from the set of shapes corresponding to at least one
module and applying the selected shape to the at least one module, wherein each
iteration of annealing the circuit design is evaluated according to evaluation of a cost
function ~~using the cost function and the set of shapes for the at least one module.~~

2. (Original) The method of claim 1, said defining step further comprising splitting modules into sub-modules, wherein at least one of the sub-modules consists of components of a same type.

Claim 3. (Cancelled)

4. (Currently Amended) The method of claim ~~[[3]]~~ 1, said annealing step further comprising assigning modules and assigned shapes to locations on the programmable logic device.

5. (Original) The method of claim 4, said annealing step further comprising at least one of swapping locations of components of a same type that have associated grid sites, swapping two modules in a sequence pair, and switching the shape of a module from one shape in the set of shapes associated with that module to another.

6. (Original) The method of claim 4, said annealing step further comprising using bipartite matching of individual components.
7. (Original) The method of claim 4, further comprising:
identifying modules that share a timing critical path; and
moving identified modules closer to one another.
8. (Original) The method of claim 1, wherein the programmable logic device is a Field Programmable Gate Array.
9. (Currently Amended) The method of claim 1, wherein each shape of a set of shapes associated with a module has a minimum width and height of at least a width and height of a largest relatively placed macro module to be placed within that module.
10. (Original) The method of claim 1, further comprising:
generating a flat placement flow for the circuit design; and
comparing the annealed circuit design with the flat placement flow to determine a measure of quality for the determined floorplan.
11. (Currently Amended) A system for designing a programmable logic device comprising:
~~means for identifying a cost function that penalizes floorplans of a circuit design that do not fit on the programmable logic device;~~
means for defining modules of a circuit design comprising components of a same type;
means for determining a set of shapes associated with each at least one module prior to annealing the circuit design; and
means for annealing the circuit design to determine a floorplan by, at least in part, selecting a different shape from the set of shapes corresponding to at least one module and applying the selected shape to the at least one module, wherein each iteration of annealing the circuit design is evaluated according to evaluation of a cost

function ~~using the cost function and the set of shapes for the at least one module.~~

12. (Original) The system of claim 11, said means for defining further comprising means for splitting modules into sub-modules, wherein at least one of the sub-modules consists of components of a same type.

Claim 13. (Cancelled)

14. (Currently Amended) The system of claim ~~[[13]]~~ 11, said means for annealing further comprising means for assigning modules and assigned shapes to locations on the physical device.

15. (Original) The system of claim 14, said means for annealing further comprising means for performing at least one of swapping locations of components of a same type that have associated grid sites, swapping two modules in a sequence pair, and switching the shape of a module from one shape in the set of shapes associated with that module to another.

16. (Original) The system of claim 14, wherein said means for annealing use bipartite matching of individual components.

17. (Original) The system of claim 14, further comprising:
means for identifying modules that share a timing critical path; and
means for moving identified modules closer to one another.

18. (Original) The system of claim 11, wherein the programmable logic device is a Field Programmable Gate Array.

19. (Currently Amended) The system of claim 11, wherein each shape of a set of shapes associated with a module has a minimum width and height of at least a width and height of a largest relatively placed macro module ~~to be placed within that module.~~

20. (Original) The system of claim 11, further comprising:
means for generating a flat placement flow for the circuit design; and
means for comparing the annealed circuit design with the flat placement flow to
determine a measure of quality for the determined floorplan.

21. (Currently Amended) A machine readable storage, having stored thereon a
computer program having a plurality of code sections executable by a machine for
causing the machine to perform the steps of:

~~identifying a cost function that penalizes floorplans of a circuit design that do not
fit on a programmable logic device;~~

defining modules of a circuit design comprising components of a same type;
prior to annealing the circuit design, determining a set of shapes associated
with each ~~at least one~~ module; and

annealing the circuit design to determine a floorplan by, at least in part,
selecting a different shape from the set of shapes corresponding to at least one
module and applying the selected shape to the at least one module, wherein each
iteration of annealing the circuit design is evaluated according to evaluation of a cost
function ~~using the cost function and the set of shapes for the at least one module.~~

22. (Original) The machine readable storage of claim 21, said defining step further
comprising splitting modules into sub-modules, wherein at least one of the sub-
modules consists of components of a same type.

Claim 23. (Cancelled)

24. (Currently Amended) The machine readable storage of claim ~~[[23]]~~ 21, said
annealing step further comprising assigning modules and assigned shapes to
locations on the physical device.

25. (Original) The machine readable storage of claim 24, said annealing step further comprising at least one of swapping locations of components of a same type that have associated grid sites, swapping two modules in a sequence pair, and switching the shape of a module from one shape in the set of shapes associated with that module to another.

26. (Original) The machine readable storage of claim 24, said annealing step further comprising using bipartite matching of individual components.

27. (Original) The machine readable storage of claim 24, further comprising:
identifying modules that share a timing critical path; and
moving identified modules closer to one another.

28. (Original) The machine readable storage of claim 21, wherein the programmable logic device is a Field Programmable Gate Array.

29. (Currently Amended) The machine readable storage of claim 21, wherein each shape of a set of shapes associated with a module has a minimum width and height of at least a width and height of a largest relatively placed macro module to be placed within that module.

30. (Original) The machine readable storage of claim 21, further comprising:
generating a flat placement flow for the circuit design; and
comparing the annealed circuit design with the flat placement flow to determine a measure of quality for the determined floorplan.